



Basic Vegetable Gardening

Lesson 5: Transplanting Seedlings

Lesson Summary: In this activity, members will measure the height of the plants ready to be transplanted, calculate their growth rate (optional), and transplant their seedlings into the garden. They will also plant any other seeds directly into the garden.

Intended Learning Outcomes:

Members know how to handle and transplant seedlings.
Members understand the necessary spacing requirements in a garden.
Members follow a garden plan in planting plants in a garden.

Length: 40-60 minutes

Materials:

Garden plan from Lesson 2
Seedlings from Lesson 4
Rulers, tape measures, or a piece of string that has been marked off in equal lengths.
Any additional seeds that will be planted directly into the garden.
Chalkboard or large paper for the leader.
Hoes and other garden tools.

Background: This lesson should take place 3-4 weeks after the seeds were started in Lesson 4. During this lesson, members will transplant seeds to the garden and plant any remaining seeds directly into the garden. This lesson is part of Step 3 - Planting the Garden.

The steps are the following:

1. Choosing a site: Where to put your garden
2. Preparing a site: Choose your garden design
3. Planting the garden
4. Tending the garden
5. Harvesting, preparing and eating the food

Lesson Steps

1. (5 minutes) - Introduction

Review with the group what was done at the last lesson. Members should recall that the group started the transplant seeds in containers or in a covered nursery outdoors to grow.

Ask members why it is helpful to plant seeds in small containers rather than planting directly into the garden.

Answer: Seeds are often harmed by harsh rains or sun, and that is why they are planted in small containers or a covered nursery first.



Have a member report about watering and caring for the transplants for the previous few weeks. Tell the group of any problems, and report on the growth of the plants.

Tell members that today they will be transplanting the seedlings into the garden and planting the other seeds directly into the garden soil. First, they will measure and record the height of the plants they planted during the last lesson.

2. **(20 minutes) – Measure the height of the plants and calculate the rate of growth. This activity is optional.** However, it can provide an important math lesson.



Question to investigate: Do different plants grow at different rates?

2.1 (5 minutes) Have members form small groups and assign one of the plants that were planted at the last lesson to each group. For example, one group will measure the carrots, while another group measures the beets. Have each member or each group copy the following chart into their notebook or on a separate sheet of paper.

2.2 (5 minutes) Groups go to the area with the seedlings, measure the height, and record the data. You may find it easier to have the members find the tallest plant and only record that height, or, if possible, they should measure every plant and find the average height. The second option will take a lot more time, and may be too much work, depending on how many seeds were planted and the ability of your group.

Have each group turn their sheet of paper over to the back side and make the following chart. (Write it on the blackboard.) Explain the chart.

Listed below is an example of the growth per day of the tomato plants, if they were grown in transplant containers for 30 days. Note that the example calculated the average plant height, not the tallest plant height. You may choose to record the tallest plant height instead.

Plant	Tallest Plant Height	Average Plant Height	Growth per day
<i>Example: tomato</i>	<i>8 cm</i>	<i>6 cm</i>	<i>6 cm / 30 days = .5 cm/day</i>



Note: If members will be measuring all of the plant heights, they should record the height of every plant, add the height of each together, and divide by the number of plants.

Example for finding averages:

There are 6 tomato plants that have sprouted. Measure and record the 6 plant heights. They are 10 cm, 13 cm, 13 cm, 13 cm, 14 cm, and 14 cm. Add $10+13+13+13+14+14 = 77$ cm. Then take $77\text{cm} / 6$ plants = average height of 12.8 cm per plant.

As members begin to measure their plants, walk around and make sure they are measuring correctly and accurately. Make sure they are starting to measure at the “0” mark on the ruler or marking device, and accurately recording the height of the plant.

2.2 (5 minutes) Tell each group that what they are doing is being a scientist. They will share their data with the class. Each group should record the data from the other groups. If the members found the average of the plant heights, then only the average needs to be recorded. If they are comparing the tallest plant heights among the different types of plants, then the maximum height should be recorded. As the members are presenting their data, the leader or a member can fill in the chart on the chalk board.

2.3 (5 minutes) Discuss the findings with the members. Depending on the plants, some possible questions to start the discussion with are:

- Which plants did you think were going to grow the fastest?
- Which plants did grow the fastest?
- Today we will transplant these plants into the garden. Do you expect the rate of growth to remain the same, increase, or decrease? Why?
- What else did you observe about the plants today?
- Did all of the plants look healthy?
- Do you think we need to thin any of the plants (if too many seeds were planted in the same container, then they should be spread out when they are placed into the garden)

3. (30 minutes) – Members transplant seedlings into the garden

3.1 Now the group will go outside and start transplanting the seedlings into the garden. You may find it easier to divide the work among small groups. Don’t forget your garden plan. This is also the time to plant any seeds that you chose not to plant earlier as transplants.

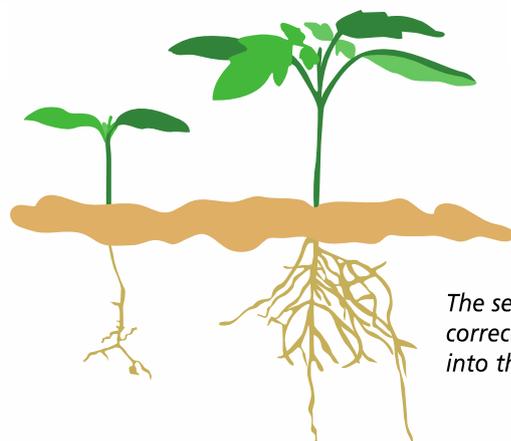


Although the group has already worked up the soil and marked off the areas for the different plants, it may be necessary to work up the top part of the soil again. The soil must be loose and fine before you put the plants in.

Show the members how to plant the small transplants by following the guidelines below. It is important that the members handle the plants very gently. Often times, transplants get damaged while they are being transplanted. Members must carefully take them out of the small containers and carefully move them to the garden. Stress that they should not bend the plants during this time.

1. Dig a hole large enough to hold the transplant roots. Add a handful or two of compost to the transplant hole to help seedlings get off to a good start. Fill the hole with water and allow it to drain. This will ensure that the soil surrounding the transplant will have adequate moisture.
2. Transplant only the most healthy and vigorous seedlings. This means the seedlings must have good roots and at least two sets of well-developed, true leaves.
3. Take special care to handle the transplants. To avoid damaging the roots or stems, handle them gently by the leaves, not the stem. Remove the seedlings with a trowel, taking along a good size root and soil ball. This will help minimize the “transplant shock” to the seedling.
4. Except for tomatoes, replant all seedlings at a depth that matches their depth in the seedling container. Tomatoes are an exception to this and can be planted 4 cm or so deeper than they were in the seedling bed. Tomatoes will sprout new roots from the stem and have a stronger, deeper root system.
5. Space the plants according to the guidelines below.
6. Press soil firmly around the roots of the transplants and water lightly to allow soil to settle around the transplants.

Some plants may not be ready to be transplanted yet. Save those and plant them when they are ready.



The seedling on the right is the correct size for transplanting into the garden.



For the groups that will be planting seeds directly into the garden, make sure they have built up rows for the plants to be planted into. The rows should be about 15 centimeters apart and 0.5 centimeters deep across the nursery planting bed. Sow 2 seeds per 1 centimeter in the row, except for plants that take a lot of space, such as pumpkin, squash, and melon. Those should be planted in mounds, with 3-4 seeds per mound.

After the garden is planted, water each section well, taking care not to wash away the new seeds.

After each group has finished their transplanting or direct planting of seeds, wrap-up the day by having the members clean up their area and gather together as one big group.

4. (5 minutes) - Summary and Debrief

Ask the members the following questions:

- What was the hardest part about transplanting the young plants?
- Did you have any problems with planting the seeds directly into the garden?
 - How did the small containers work for the seedlings? Were there some that worked better than others?
 - Would it be possible to use small containers to grow the plants in the whole time, instead of planting them in the garden?
 - What plants would be best for growing in small containers? Could you plant some of these seeds into large containers such as sacks?
 - Are there weather conditions that would harm the young plants and seeds in the next few days?

5. (1 minute) - Close



Optional: Tell members that the next lesson they will continue to chart the growth of their plants.

Members should keep all of their notes and charts in their notebooks to look at in the future.

